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There is, however, a more vital contradiction in the text. On p. 620 in a discussion of the facts presented in Table I we read: "Die kleineren Eier zeigten eine geringe Neigung sich schneller zu entwickeln." On p. 647 referring again to the Table I we read: "In den Furchungs- und Gastrula-Stadien zeigen die kleinen Eier die Tendenz, sich weniger schnell zu entwickeln, als die grösseren Eier." And further on, p. 647, and referring again to the Table I, we read: "Da wir nun aber gesehen haben, dass die grossen und kleinen Eier sich gleichgut und gleichrash entwickeln (s. Tabelle 1) etc."

Thus it appears that the small eggs develop somewhat faster, and slower than the large eggs, and just as well as the large eggs!

SERGIUS MORGULIS.

PARASITOLOGY

Cestodes of Birds.—Fuhrmann has recently published (*Zool. Jahrb.*, Suppl. 10, Heft 1) a most valuable monograph on the Cestodes of Birds. He had at his disposal all the material from the great European museums and from the private collections of prominent European helminthologists, so that the work is vastly more valuable than a mere literary revision with studies on limited personal collections. In 1782 Gæze described 14 species of *Tania* from birds; in 1819 Rudolphi listed 54 certain and 30 uncertain species, and in 1850 Diesing recorded 81 certain and 28 questionable species. Von Linstow's *Compendium der Helminthologie* and *Nachtrag* in 1889 gave references to 230 bird cestodes from 340 host species. In this investigation Fuhrmann had material from 200 more species of birds at his disposal and recorded in all some 500 cestode parasites from them. When one considers that 12,000 species of birds are known and Cestodes have been collected from 540 only, it is clear that many more new forms are to be expected; these are to come most prominently from extra-European lands. North America which Fuhrmann notes as relatively unexplored, will contribute its share and I may add that investigations in this field are already in finished manuscript as studies from my own laboratory.

Some of the general conclusions which Fuhrmann has reached as a result of his 12 years of work in this field are of wide interest. The distribution of cestodes among the various group of birds shows that a given species occurs only in a given group

of birds and hence is typical of it. Birds with similar food habits shelter often radically different cestode parasites both in species and in genera. On the other hand, related birds of different food habits often show similar genera among their cestode guests even though the species differ. A zoogeographic survey of the cestodes in the various groups of birds shows a sharp contrast between the species found in different regions and furnishes strong evidence of the value of parasites as aids in zoogeographic investigations. In this respect the cestodes are unquestionably of the greatest value in the light of Fuhrmann's studies.

It would be impossible to abstract the systematic portion of Fuhrmann's paper. Many of the doubtful and insufficiently described species of other authors are here positively evaluated after comparison of the original material. Each genus is characterized on the basis of the author's investigations and the type species designated. The other species are also listed with references to the appropriate literature and to all known hosts. The faunistic section contains a complete list of the hosts with their cestode parasites and a record of the geographic distribution. A good alphabetic index of families, genera, species and synonyms, together with a full bibliography, closes the paper. Though not stated specifically, the monograph appears to be confined to the Cyclophyllidea and all will await with great interest the publication by this author of further studies dealing with other groups of avian cestodes.

A paper by Plehn (*Zool. Anz.*, 33: 427) on a blood-inhabiting cestode designated *Sanguinicola*, is of especial interest both from the morphological and from the biological standpoint. The animal occurs in the blood system of Cyprinid fishes, being most frequently found in the *bulbus arteriosus*, and was originally described in 1905 as an aberrant rhabdocel. In structure it agrees well with the few monozoic cestodes classed together as Cestodaria and often separated from other cestodes. The species does not reach full development in this host, or at least in the blood vessels, since no specimens with fully developed female organs have yet been found. The author conjectures that it is withdrawn by some blood-sucking parasite and undergoes further development in that host. In view of the size of the worm and its evident inability to reach even the superficial arterioles, such a life cycle seems at least unlikely. The confessedly imperfect account of the structure of this worm makes any dis-

cussion of its precise genetic relationships unwise and the proposed phylogeny of parasitic flatworms based upon it has therefore only a purely suggestive value.

The Harben lectures for 1908, which were delivered by Professor George H. F. Nuttall, of Cambridge, England, have been printed (*Jour. Roy. Inst. Pub. Health*, July–September, 1908). The topics covered are the ticks and the diseases which they transmit to man and domestic animals; the diseases are among the most important of those caused by animal parasites especially and are due to spirochætes, piroplasma and filaria. Nuttall's account, which is the most complete résumé available in this field, is notably lucid and scholarly in presentation.

HENRY B. WARD.